IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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12402

In re Application of:

Francois COURT et al. Examiner: W. Aughenbaugh

Serial No.: 09/762,677 Group Art Unit: 1772

Filed: April 5, 2001

Title: TUBE FOR GASOLINE TRANSPORT

I hereby certify that this correspondence is being deposited with the U.S. Postal Services as First Class Mail in an envelope addressed To: Commissioner of Patents and Trademarks, Washington, D.C. 20231 On: 11-18-02
Name: H. Shubin
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Date: 11-18-02

REPLY

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

In response to the Office Action dated June 18, 2002, please amend the above-referenced application as indicated below and consider the remarks which follow:

IN THE ABSTRACT:

Cancel and replace with new Abstract, as amended (on separate sheet)

IN THE CLAIMS:

Please amend claims 1-19 as follows:

1. (Amended) A tube having in a radial direction, from inside to the outside, an inner layer comprising a blend of a semicrystalline thermoplastic fluororesin and an ABC triblock copolymer with three blocks A, B and C being linked together in this order, each block being

either a homopolymer or a copolymer obtained from two or more monomers, the A block being linked to the B block and the B block to the C block by means of a covalent bond or of an intermediate molecule linked to each adjacent block via a covalent bond, and wherein:

- the A block is compatible with the fluororesin,
- the B block is incompatible with the fluororesin and is incompatible with the A block, and
- the C block is incompatible with the fluororesin, the A block and the B block.

2. (Amended) A tube according to claim 1 which is a bilayer tube and comprises an outer later made of polyamide or of a polyamide/polyolefin blend with a polyamide matrix. the inner layer and the polyamide or polyamide-matrix layer being fastened together.

3. (Amended) A tube according to claim 1 which is a bilayer tube and comprises an outer layer made of polyamide or of a polyamide/polyolefin blend with a polyamide matrix, the inner layer and the polyamide or polyamide-matrix layer being fastened together by the addition of a functional acrylic compound to the blend of the inner layer.

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4. (Amended) A tube according to claim 1 which is a trilayer tube and comprises an outer layer made of polyamide or of a polyamide/polyolefin blend with a polyamide matrix, the inner layer and the polyamide or polyamide-matrix layer being fastened together by an adhesion binder placed between them.

5. (Amended) A tube according to claim 1 which is a multilayer tube and comprises a layer made of polyamide or of a polyamide/polyolefin blend with a polyamide matrix, the inner layer and the polyamide or polyamide-matrix layer being fastened together by a succession of intermediate layers, each of which is fastened to its adjacent layers.

6. (Amended) A tube according to claim 1 wherein the ABC triblock copolymer contains, as by-products of its synthesis, a BC diblock copolymer and optionally homopolymer.

7. (Amended) A tube according claim 1 wherein the ABC triblock copolymer contains, as by-products of its synthesis, an AB diblock copolymer and optionally A homopolymer.

8. (Amended) A tube according to claim 1 wherein the inner layer contains a dispersed electrically conductive carbon black filler in an amount sufficient to give this inner layer a surface resistivity of less than or equal to 10^9 Ω/cm^2.

9. (Amended) A tube according to claim 1 wherein the semicrystalline thermoplastic fluororesin and ABC triblock copolymer blend contains at least 50% by weight of semicrystalline thermoplastic fluororesin and the balance (to 100%) by weight of the triblock copolymer of number-average molecular mass (M_n) greater than or equal to 20,000 $g.mol^{-1}$ consisting of:

- 20 to 93 parts by weight of A sequences,
- 5 to 68 parts by weight of B sequences,
- 2 to 65 parts by weight of C sequences,

the percentages being calculated with respect to the total weight of fluororesin with the block copolymer without taking into account in these percentages the optional presence of other additives.

10. (Amended) A tube according to claim 1 wherein the fluororesin is

- a homopolymer or copolymer of vinylidene fluoride (VF2) and at least one other fluoromonomer,
- homopolymers and copolymers of trifluoroethylene (VF3);
- copolymers, or terpolymers of chlorotrifluoroethylene (CTFE), tetrafluoroethylene (TFE) or hexafluoropropylene (HFP) units and/or ethylene, and optionally VF2 and/or VF3 units.

11. (Amended) A tube according to claim 10 wherein the fluororesin is poly(vinylidene

fluoride) (PVDF).

12. (Amended) A tube according to claim 1 wherein the B block has a glass transition temperature $T_{g(B)}$, measured by differential thermal analysis, of -100°C to -50°C.

13. (Amended) A tube according to claim 1 wherein the B block is a polydiene.

14. (Amended) A tube according to claim 1, wherein the C block has a glass transition temperature $T_{g(C)}$ or a melting point $T_{m(C)}$ greater than the $T_{g(B)}$ of the B block.

15. (Amended) A tube according to claim 1, wherein the A block is a homopolymer or copolymer of an alkyl (alkyl) acrylate.

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16. (Amended) A tube according to claim 1 wherein the A block is poly(methyl methacrylate) (PMMA).

17. (Amended) A tube according to claim 16, wherein the PMMA is syndiotactic and its glass transition temperature $T_{g(A)}$, measured by differential thermal analysis, is from + 120°C to + 140°C.

18. (Amended) A tube according to claim 1 wherein the ABC triblock is poly(methyl methacrylate-*b*-butadiene-*b*-styrene).

19. (Amended) A quadrilayer tube according to claim 1 having the structure:

PA/binder/fluoropolymer/fluoropolymer + ABC triblock + electrically conductive carbon black.

Please add new claims 21-23 as follows:

--21. (**New**) A tube according to claim 10, wherein the fluororesin is a homopolymer or copolymer of VF2 and at least one of chlorotrifluoroethylene (CTFE), hexafluoropropylene (HFP), trifluoroethylene (VF3) or tetrafluoroethylene (TFE).

22. (**New**) A tube according to claim 13, wherein the B block is polybutadiene, polyisoprene or a random copolymer thereof optionally partially or completely hydrogenated.

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23. (**New**) A tube according to claim 15, wherein the A block is a homopolymer or copolymer of methyl methacryclate (MMA) and/or methyl or ethyl acrylate and/or vinyl acetate.--